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(54) Title: METHOD FOR IDENTIFYING AN UNKNOWN ALLELE			
(57) Abstract			
<p>The invention provides a method for identifying an unknown allele of a polyallelic gene, which method comprises (i) contacting the unknown allele with a panel of probes, each of which recognises a sequence motif that is present in some alleles of the polyallelic gene but not in others; (ii) observing which probes recognise the unknown allele so as to obtain a fingerprint of the unknown allele; and (iii) comparing the fingerprint with fingerprints of known alleles. The use of a panel of probes which each recognises a different motif allows identification of which motifs are present in the unknown allele. The alleles of the polyallelic gene each have a unique combination of motifs and so identification of this combination (or "fingerprint") leads to identification of the unknown allele.</p>			

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 96/02959

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 92 10589 A (HOFFMANN LA ROCHE) 25 June 1992 see claims 1-30	1-3, 13-17,21 8-10
X	WO 89 11547 A (CETUS CORP) 30 November 1989 see the whole document	1-4, 13-18,21
X	HUMAN IMMUNOLOGY, vol. 40, - 1994 pages 25-32, XP000673170 ALLEN M. ET AL.,: "A comprehensive polymerase chain reaction-oligonucleotide typing system for the HLA class I A locus" cited in the application see the whole document	1-4, 13-18,21
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE MEDLINE US NATIONAL LIBRARY OF MEDICINE (NLM), BETHESDA, MD, US AN: 92142000, XP002030535 see abstract & TISSUE ANTIGENS, vol. 38, no. 5, - November 1991 pages 193-198, EIERMANN T ET AL.: "HLA-DPB1 oligonucleotide typing of a southwest caucasian population" ---	1-3
Y	GENETIC ANALYSIS TECHNIQUES AND APPLICATIONS, vol. 9, no. 1, 1 February 1992, pages 3-8, XP000276389 LANDEGREN U: "DETECTION OF MUTATIONS IN HUMAN DNA" see Fig.1, page 4 ---	8,10
Y	EP 0 543 222 A (SCHIAPPARELLI DIAGNOSTICI ISMU) 26 May 1993 abstract and claims ---	9
A	NATURE GENETICS, vol. 5, October 1993, pages 112-117, XP000606263 GROMPE M: "THE RAPID DETECTION OF UNKNOWN MUTATIONS IN NUCLEIC ACIDS" see page 114, Heteroduplex analysis ---	8
P,X	PROC. NATL. ACAD. SCI. USA, vol. 93, - October 1996 pages 10961-10965, XP002030163 ARGUELLO R. ET AL.: "A novel method for stomultaneous high resolution identification of HLA-A, HLA-B, and HLA-Cw alleles" see the whole document -----	1-22

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB/96/02959

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9210589 A	25-06-92	AU 656161 B AU 9136191 A CA 2075037 A EP 0514534 A JP 6505625 T US 5567809 A	27-01-95 08-07-92 07-06-92 25-11-92 30-06-94 22-10-96
WO 8911547 A	30-11-89	US 5310893 A AT 140035 T AU 633830 B AU 3690889 A DE 68926784 D DE 68926784 T EP 0417160 A JP 3504325 T US 5541065 A	10-05-94 15-07-96 11-02-93 12-12-89 08-08-96 27-02-97 20-03-91 26-09-91 30-07-96
EP 0543222 A	26-05-93	IT 1252295 B	08-06-95

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